77TH CONGRESS, 1st Session } HOUSE OF REPRESENTATIVES { DOCUMENT No. 263

MISSISSIPPI RIVER AT WINONA, MINN.

LETTER

FROM

THE SECRETARY OF WAR

TRANSMITTING

A LETTER FROM THE CHIEF OF ENGINEERS, UNITED STATES ARMY, DATED APRIL 2, 1941, SUBMITTING A REPORT, TOGETHER WITH ACCOMPANYING PAPERS AND AN ILLUSTRATION, ON REEXAMINATION OF MISSISSIPPI RIVER WITH A VIEW TO DETERMINING THE ADVISABILITY OF THE IMPROVEMENT OF A HARBOR AT WINONA, MINN., REQUESTED BY RESOLUTION OF THE COMMITTEE ON RIVERS AND HARBORS, HOUSE OF REPRESENTATIVES, ADOPTED JUNE 6, 1939

JUNE 12, 1941.—Referred to the Committee on Rivers and Harbors and ordered to be printed with an illustration

WAR DEPARTMENT,
Washington, June 10, 1941.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

DEAR MR. SPEAKER: I am transmitting herewith a report dated April 2, 1941, from the Chief of Engineers, United States Army, on reexamination of the Mississippi River between the Missouri River and Minneapolis, to determine the advisability of the improvement of a harbor at Winona, Minn., requested by resolution of the Committee on Rivers and Harbors, House of Representatives, adopted June 6, 1939, together with accompanying papers and illustration.

The Bureau of the Budget has been consulted and advises that authorization of the project recommended by the Chief of Engineers would not be in accord with the program of the President at this time.

Sincerely yours,

HENRY L. STIMSON,
Secretary of War.

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WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, April 2, 1941.

The CHAIRMAN, COMMITTEE ON RIVERS AND HARBORS,
House of Representatives, Washington, D. C.

MY DEAR MR. CHAIRMAN: 1. The Committee on Rivers and Harbors of the House of Representatives, by resolution adopted June 6, 1939, requested the Board of Engineers for Rivers and Harbors to review the reports on the Mississippi River between the Missouri River and Minneapolis, submitted in House Document No. 137, Seventy-second Congress, first session, with a view to determining the advisability of the improvement of a harbor at Winona, Minn. I enclose the report of the Board in response thereto.

2. After full consideration of the reports secured from the district and division engineers, the Board recommends the provision of a basin at Winona, Minn., by dredging to a depth of 9 feet an area along the right bank of the Mississippi River between Chatfield and Carimona Streets, and by dredging to a depth of 5 feet and protecting with a breakwater an area between Carimona and Hamilton Streets, all generally in accordance with the plan of the district engineer, at an estimated first cost of $17,000 with annual maintenance at $600; subject to the provisions that local interests revet the river face of the terminal property; furnish assurances satisfactory to the Secretary of War that they will construct adequate terminal facilities at the basin and provide necessary floating booms, wharves, and servicing facilities at the small-boat harbor open to the public on equal terms; furnish, free of cost to the United States, all necessary rights-of-way and spoil-disposal areas for new work and subsequent maintenance when and as required; and hold and save the United States free from claims for damages resulting from the improvement.

3. After due consideration of these reports, I concur in the views and recommendations of the Board.

Very truly yours,

J. L. SCHLEY,
Major General,
Chief of Engineers.

REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS

WAR DEPARTMENT,
BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
Washington, March 3, 1941.

Subject: Mississippi River, harbor at Winona, Minn.
To: The Chief of Engineers, United States Army.

1. This report is in response to the following resolution adopted June 6, 1939:

Resolved by the Committee on Rivers and Harbors of the House of Representatives United States, That the Board of Engineers for Rivers and Harbors, created under section 3 of the River and Harbor Act, approved June 13, 1902, be, and is hereby, requested to review the reports on the Mississippi River between the Missouri River and Minneapolis, submitted in House Document Numbered 137, Seventy-second Congress, first session, with a view to determining the advisability of the improvement of a harbor at Winona, Minnesota.

2. Winona, Minn., is on the west bank of the Mississippi River, 128 miles downstream from Minneapolis and on the pool of lock and dam No. 6. Its water front is unimproved, except for a short length of river wall with a paved levee formerly used as a steamboat landing and a line of pile clusters with a derrick operated by a public-utility company for unloading coal. A terminal for the unloading of petroleum products is now under construction. Facilities for the accommodation of yachts or small recreational craft consist of a few boathouses and floating booms provided by the Winona Motorboat Club for its members. The section of the river between Minneapolis and the Missouri River is under Federal improvement to provide by canalization a channel of 9-foot depth, with suitable widths for long-haul common-carrier service. No project for improvement of the immediate locality has been authorized by Congress.

3. Winona, with a population of 21,000, is a manufacturing point and railroad center of considerable importance located in a predominantly agricultural section. Excellent highway connections are available and five railroads serve the city, three of which have important branch lines terminating at Winona. Prior to 1939 the annual waterborne commerce was about 500 tons. In 1939 it increased to 29,185 tons, practically all of which was coal for use by the public-utility company. Local interests claim that 640 small boats make Winona their base of operations, but a great number of these are small skiffs and rowboats.

4. Local interests desire the dredging of the channel of the river to project depth up to the city-owned terminal property and improvement of a protected small-boat harbor, the dredged material to be placed on the terminal property. They claim that access to an improved terminal will result in the movement by water of over 100,000 tons of freight, principally coal, grain, iron and steel products, and sulfur, at a saving of approximately $111,000. The City Council of Winona has agreed to improve the terminal property by the construction of a sea wall, railroad connections, and other facilities. The small-boat harbor is desired to afford protection from ice and waves.

5. The district engineer proposes the dredging, to a depth of 9 feet, of the area adjacent to the terminal property approximately 1,800 feet in length and extending riverward to the main channel. The small-boat harbor adjoining the terminal basin on the north would be dredged to a depth of 5 feet and be protected by the construction of a breakwater extending some 200 feet riverward. The total Federal cost of the improvement is estimated at $16,600 for new work, of which $13,500 is for dredging the terminal basin and $3,100 for constructing the small-boat basin. The annual cost of maintenance is $600. The cost to local interests for necessary revetment of the shore, for required lands, and for facilities at the freight terminal is $65,000 and for lands and facilities at the small-boat basin is $6,000. The estimated annual carrying charges are $1,315 to the United States and $9,705 to local interests. The district engineer states that Winona is the logical transshipment point between water and rail for commodities originating in, and destined to, a considerable tributary area served by three important branch line railroads which have their terminus at Winona. He considers the estimate of prospective tonnage and savings submitted by local interests to be too large. The movement of coal, sulfur, and grain in the amount contemplated by local interests would involve

revision of rail rates in some instances and would require more extensive handling and storage facilities than now proposed. After careful analysis of the estimates submitted by local interests the district engineer concludes that the probable annual water-borne commerce would be 52,000 tons, with savings of $35,000 which are over three times the annual carrying charges. He estimates that the value of small boats and boathouses destroyed by ice floes at Winona has averaged $220 annually since 1918, exclusive of repairable damage. Canalization of the river has stimulated an increasing interest in recreational boating. Facilities for harboring and servicing small boats are very meager for a considerable distance above and below Winona, and the district engineer believes that there is an urgent need for a harbor at Winona for local and transient small boats. He recommends the dredging of the terminal basin and construction of the small-boat harbor, subject to certain conditions of local cooperation. The division engineer concurs.

VIEWS AND RECOMMENDATIONS OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS

6. The Board concurs in general in the views and recommendations of the reporting officers. The provision of a maneuvering basin, with freight-handling facilities to be provided by local interests, will afford a considerable area tributary to Winona the advantages of water transportation provided by the improved Mississippi River and result in savings in transportation costs that fully justify the cost of improvement. Recreational boating is increasing with the improvement of the river, and facilities for harboring and servicing the boats are required. The proposed small-boat harbor will provide such facilities for the locally owned and transient boats in the area. The Board recommends the provision of a basin at Winona, Minn., by dredging to a depth of 9 feet an area along the right bank of the Mississippi River between Chatfield and Carimona Streets, and by dredging to a depth of 5 feet and protecting with a breakwater an area between Carimona and Hamilton Streets, all generally in accordance with the plan of the district engineer, at an estimated first cost of $17,000 with annual maintenance of $600; subject to the provisions that local interests revet the river face of the terminal property; furnish assurances satisfactory to the Secretary of War that they will construct adequate terminal facilities at the basin and provide necessary floating booms, wharves, and servicing facilities at the small-boat harbor open to the public on equal terms; furnish free of cost to the United States, all necessary rights-of-way and spoil-disposal areas for new work and subsequent maintenance when and as required; and hold and save the United States free from claims for damages resulting from the improvement.

For the Board:

THOMAS M. ROBINS,
Brigadier General, Corps of Engineers,
Senior Member.

REEXAMINATION OF MISSISSIPPI RIVER AT WINONA, MINN.

SYLLABUS

The district engineer finds that the development of a municipal barge terminal on the Mississippi River at Winona, Minn., would probably result in considerable savings in transportation costs to the city and its adjacent trade territory. He also finds that there is need for a protected harbor for small boats at that location. He recommends that the United States dredge the areas to serve the proposed barge terminal and small-boat harbor and construct a breakwater at estimated Federal costs of $16,600 for construction and $600 for additional annual maintenance, subject to certain conditions of local cooperation to be furnished by the city.

WAR DEPARTMENT,
UNITED STATES ENGINEER OFFICE,
St. Paul, Minn., April 29, 1940.

Subject: Review of reports on Mississippi River between the Missouri River and Minneapolis—Harbor at Winona, Minn.

To: The Division Engineer, Upper Mississippi Valley Division, St. Louis, Mo.

1. *Authority.*—This report is submitted in compliance with the following resolution of the Committee on Rivers and Harbors, House of Representatives, United States, adopted June 6, 1939:

Resolved by the Committee on Rivers and Harbors of the House of Representatives, United States, That the Board of Engineers for Rivers and Harbors, created under section 3 of the River and Harbor Act, approved June 13, 1902, be, and is hereby, requested to review the reports on the Mississippi River between the Missouri River and Minneapolis, submitted in House Document Numbered 137, Seventy-second Congress, first session, with a view to determining the advisability of the improvement of a harbor at Winona, Minnesota.

2. *Reports being reviewed.*—The reports being reviewed are contained in House Document No. 137, Seventy-second Congress, first session and cover the completion of the survey of Mississippi River between the Missouri River and Minneapolis, Minn., with a view to securing a navigable channel of 9-foot depth, with suitable widths, partially covered by reports contained in House Document No. 290, Seventy-first Congress, second session. The survey was conducted by a Special Board which found that the most favorable and economical method of securing the channel would be by canalization by means of 24 locks and dams and an additional lock at each of the Twin Cities, Hastings, and Keokuk Dams,[1] at a total estimated cost of $124,000,000, with $750,000 annually for operation and care and $1,000,000 annually for channel maintenance. This method was recommended by the Chief of Engineers for the improvement of the upper Mississippi River from the mouth of the Missouri River to Minneapolis. The project adopted by Congress is described under "Existing project."

3. *Description.*—The Mississippi River above Winona drains an area of 59,245 square miles, nearly all for which lies in Minnesota and Wisconsin. The maximum and minimum discharges at Winona are estimated at 180,000 second-feet (1880) and 2,250 second feet (1933), respectively. The maximum water surface elevation was 657.14 and the minimum 636.72, both elevations being referred to mean sea level datum, 1912 adjustment. High discharges occur in the period from March to July and occasionally in September and October, and low discharges in the winter or in late summer. The river is ice-bound

[1] These dams already existed, each with a single lock.

from about December 15 to March 10, but the period when navigation is interrupted is longer, lasting roughly from November 15 to March 15. Lock and dam No. 6, a unit of the 9-foot channel project located at Trempealeau, Wis., 11 miles below Winona, which was placed in operation in 1936, maintains a normal pool at elevation 645.5 mean sea level at Winona during low and medium river discharges. All the structures of the 9-foot canalization project essential to maintain a 9-foot minimum depth from Alton, Ill., to the Northern Pacific Railway bridge at Minneapolis are complete and in operation.

4. Winona, the county seat of Winona County, Minn., is located on the right bank of the Mississippi River 127.5 miles below the present head of the 9-foot channel at Minneapolis, Minn., and 725.5 miles above the mouth of the Ohio River. It had a population in 1930 of 20,850, and it is a manufacturing point and railroad center of considerable importance. The city has excellent highway connections and is served by five railroads: The Chicago, Milwaukee, St. Paul & Pacific; the Chicago, Burlington & Quincy; the Chicago & North Western; the Chicago Great Western; and the Green Bay & Western. Of these the first two follow the river and the three latter penetrate into the hinterland, the Green Bay & Western on the left bank and the Chicago, Great Western and the Chicago & North Western on the right. There is a river wall with a paved levee in Winona, extending upstream from the foot of Walnut Street. (See pl. 1.) This was the old steamboat landing, and freight is occasionally unloaded there at present but there are no facilities for rail transshipment nor for handling cargo. The land adjacent to the foot of Walnut Street is occupied on one side by a city park and on the other by substantial industrial buildings which limit the space and make it entirely unsuited for a terminal site for handling and storing bulk commodities. A public-utility company has a line of pile clusters in the river between Liberty and Chestnut Streets and a derrick for unloading coal. Coal has been unloaded in recent years near the foot of St. Charles Street but there are no permanent facilities for cargo handling at this location.

5. There are, at present, no public facilities for the accommodation of yachts or small boats at Winona. If they tie up alongside the river wall, they are exposed to the hazard of being thrown against it by the swells created by passing tows. The Winona Motorboat Club has some facilities for the use of its members along the river between Kansas and Liberty Streets, and the United States Biological Survey also has some facilities for the use of its own boats along the shore between Kansas and Franklin Streets, but others are forced to beach or shelter their boats where best they may.

6. *Bridges.*—There are three bridges which cross the Mississippi River at Winona, two being about 1 mile above the terminal site and the third approximately 1 mile below. None of these structures will be affected by the proposed terminal development. Table 1 contains data pertinent to the bridges.

TABLE 1.—*Bridge data*

Name	Owner	Miles above Cairo	Clearances (feet)—navigable span		Type	Use
			Horizontal	Vertical above high water		
North Western	Chicago & North Western Ry. Co.	725.8	151	[1] 9.8	Swing	Railroad.
Winona Highway	State of Minnesota	725.7	350	[2] 57.0	Fixed	Highway.
Chicago, Burlington & Quincy.	Chicago, Burlington & Quincy and Green Bay & Western R. R. Cos.	723.8	200	[1] 9.7	Swing	Railroad.

[1] Swing span closed.
Center of span.

7. *Tributary area.*—Winona is located in a region that, while predominantly agricultural, still has manufacturing importance. A branch line of the Chicago & North Western Railway extends westerly from Winona to Mankato (population 14,038), passing through the important cities of Rochester (population 20,621) and Owatonna (population 7,654). A branch of the Chicago Great Western also extends westward and both lines connect with numerous other railway lines. The Green Bay & Western extends from Winona to Green Bay, Wis., passing through Merrillan (population 554), a junction point of this railroad with the Chicago, St. Paul, Minneapolis & Omaha Railway, Wisconsin Rapids (population 8,726), New London (population 4,661), etc., and making connections also with numerous other lines. Considerable manufacturing is carried on in this area, particularly pulp and paper products. The other railroads entering Winona parallel the river and do not significantly concern the city as a possible transshipment point for river-borne commerce.

8. The tributary area with respect to small boats might be considered as comprising the entire Mississippi River, its tributaries and connecting inland waters, for cruising yachtsmen from remote points in this region occasionally ascend the upper Mississippi. The great bulk of recreational craft that might be expected to use a harbor at Winona would hail, however, from the upper Mississippi and its tributaries.

9. *Previous reports.*—Other than the reports being reviewed, the only recent reports which cover the upper Mississippi River in the vicinity of Winona are those contained in House Document No. 290, Seventy-first Congress, second session. This document is known as the interim report and has been referred to above. The findings of this report are substantiated by the final reports of House Document No. 137, Seventy-second Congress, first session.

10. *Existing project.*—There is no project for the improvement of a harbor at Winona. The existing project on the Mississippi River was adopted by the River and Harbor Act approved July 3, 1930, modified by House Joint Resolution approved February 24, 1932, and River and Harbor Acts approved August 30, 1935 and August 26, 1937. The project is described in House Documents Nos. 290 and 137, supra, and provides for a channel of 9-foot depth at low water with widths suitable for long-haul common-carrier service from

Minneapolis to the mouth of the Missouri River. The Act of August 26, 1937, authorized the extension of the 9-foot channel from the lower Northern Pacific Railway bridge in Minneapolis to the proposed upper harbor area, above St. Anthony Falls, in that city. With the exception of this extension and the construction of the new lock at lock and dam No. 2, Hastings, Minn., the portion of the project within the St. Paul engineer district is practically complete. Since July 1, 1930, the Federal costs to June 30, 1939, within this district, are $45,677,192.72 for new work and $4,942,908.70 for maintenance and operating and care.

11. *Local cooperation—Past.*—There has been no local cooperation as the Federal Government has not participated in any harbor improvements at Winona.

12. *Other improvements.*—No navigable improvements have been made in the Mississippi River at Winona, nor in its immediate tributary waters, by the States of Wisconsin or Minnesota, nor by any local agency.

13. *Terminal and transfer facilities.*—There are no terminal or transfer facilities at Winona for handling river freight except those owned by the local utility company and operated for its own use. As regards small craft, there is no harbor or servicing facilities, except some boathouses and floating booms at the location used by the Winona Motorboat Club.

14. *Present commerce.*—Recently some water-borne commerce has developed at Winona, as evidenced by the following tabulation:

Tons water-borne commerce, Winona, Minn.

Year	In-bound	Out-bound	Year	In-bound	Out-bound
1935	341	74	1938	251	229
1936	259		1939	28,374	811
1937	470	149			

The great increase in in-bound traffic in 1939 is due, almost exclusively, to heavy receipts of coal, largely by the local utility company. The Standard Oil Co. (Indiana) is now constructing a terminal at the foot of Mankato Street for the unloading of gasoline. The Western Oil & Fuel Co., Minneapolis, Minn., has announced its intention to construct a gasoline and oil terminal at Winona.

15. *Prospective commerce.*—The major portion of prospective water-borne traffic at Winona consists of in-bound movements of materials originating downstream, the most important of which are coal, sulfur, iron and steel products, and some glassware. Information obtained from various sources indicates considerable annual tonnage of certain commodities, particularly coal and sulfur for which estimates as high as 150,000 to 200,000 tons of the former and 100,000 or more tons of the latter were made. The tonnages set forth in table 2, and the estimated savings thereon, were submitted by the Winona-La Crosse Traffic Bureau. This bureau is very familiar with local conditions, and claims that these tonnages will with certainty move part way by river at least. The bureau claims that a tabulation of truly prospective traffic would be much larger. The estimated savings set forth

in table 2 are based on the difference between all-barge or barge-and-rail rates via the proposed Winona terminal and all-rail rates or existing combination barge-rail rates through existing river terminals at other points, particularly via the Dubuque, Iowa, terminal located 141 miles (rail distance) from Winona. As the oil companies now planning terminals at Winona are locating at other points on the water front, and the local power company has constructed its own facilities for receiving coal by barge for its own consumption, these items do not bear on the proposed harbor project and are not given consideration in this report.

TABLE 2.—*Summary of traffic data, Winona, Minn.*

Commodity	Origin	Destination	Prospective water tonnage	Existing rail or barge-rail rate per ton	Estimated barge or barge-and-rail rate via Winona	Estimated handling charge per ton, water route	Estimated savings via Winona terminal	
							Per ton	Total annual
Bottles	Alton, Ill	Winona	600	[1] $5.80	$4.60	$0.20	$1.00	$600
Canned goods	Winona, Minn	St. Louis	500	[1] 6.20	5.00	.20	1.00	500
Do	do	Memphis	300	[2] 12.00	10.80	.20	1.00	300
Do	do	New Orleans	200	[2] 14.80	14.80		None	
Do	Rochester, Minn	St. Louis	300	[2] 7.20	6.90	.30	None	
Do	do	Memphis	200	[2] 12.80	12.00	.30	.50	100
Do	do	New Orleans	200	[2] 15.70	15.40	.30	None	
Drugs and medicines	New Orleans, La	Winona	300	[1] 32.60	22.20	.40	10.00	3,000
Spices	do	do	400	[1] 23.40	18.20	.40	4.80	1,920
Drugs and medicines	Winona, Minn	St. Louis	160	[2] 17.80	16.40	.30	1.10	176
Do	do	Memphis	300	[2] 27.00	25.00	.30	1.70	510
Do	do	Vicksburg	180	[2] 36.40	29.00	.30	7.10	1,278
Coal	Southern Illinois	Winona	15,000	[1] 3.50	2.60	.30	.60	9,000
Do	West Virginia	do	32,000	[1] 5.35	4.05	.30	1.00	32,000
Do	Illinois	Small towns	10,000	[1] 3.70	3.00	.20	.50	5,000
Do	West Virginia	do	10,000	[1] 5.50	4.80	.20	.50	5,000
Do	Illinois	Farm use	10,000	[1] 3.70	3.00	.20	.50	5,000
Coarse grain	Winona, Minn	St. Louis	5,000	[1] 3.80	1.40	.50	1.90	8,500
Do	do	Cairo	3,000	[1] 3.80	1.40	.50	1.90	5,700
Do	do	New Orleans (export).	2,000	[1] 6.00	3.80	.50	1.70	3,400
Feed	do	Memphis	1,000	[1] 4.10	2.20	.30	1.60	1,600
Do	do	Vicksburg	500	[1] 8.10	3.00	.30	4.80	2,400
Glassware	Ohio and West Virginia.	Winona	300	[1] 11.60	10.00	.40	1.20	420
Scrap iron	Winona, Minn	St. Louis	4,000	[1] 7.00	5.20	.30	1.50	6,000
Iron and steel	St. Louis, Mo	Winona	2,000	[2] 6.20	3.10	.30	2.80	5,600
Do	Chicago, Ill	do	2,000	[1] 6.20	4.50	.30	1.40	2,800
Sulfur	Texas	Fox River Valley	10,000	[1] 10.40	9.20	.20	1.00	10,000
Total								110,804

[1] Via all rail.
[2] Existing barge-and-rail rate through presently established river terminals, if lower than all-rail rate.

16. *Vessel traffic.*—Package commercial freight is at present transported principally by the Federal Barge Lines, while the transportation of bulk cargo is divided between that company and numerous independent operators. The importance of the latter is rapidly growing and they almost monopolize the transport of petroleum products. The traffic is carried in barges ranging from 126 by 33 by 7.6 feet to 300 by 48 by 11 feet, and from 500 to 3,000 tons capacity. The towboats range from 30 to 195.5 feet over-all length, those of the Federal Barge Lines being stern-wheelers, while those of the independent companies generally are of the Diesel-driven propeller type.

Tows consist of from two to five barges and the towboat, the maximum over-all dimensions being 96 feet in width and 700 to 800 feet in length.

17. Small craft range from skiffs to decked vessels 65 feet long, with a maximum draft of about 3.5 feet. It is claimed that 640 small boats make Winona their base of operations. During the 1939 season over 1,700 small craft were locked through lock and dam No. 5A, 3 miles above Winona. What proportion of these was local boats is unknown.

18. *Improvement desired.*—The improvement desired by the city of Winona is the dredging of the channel of the Mississippi River between Hamilton and High Forest Streets to provide full project depth up to the city-owned terminal property on the right bank and a basin for a small-boat harbor, the construction of a breakwater to protect the small-boat harbor from ice and waves, and the deposition of the excavated material on the terminal property. (See pl. 1.)

19. *Public hearing.*—At a public hearing held at Winona on December 29, 1939, local interests described the improvement desired and furnished data concerning the volume of freight which they believed a river terminal would handle, together with an estimate of the resultant saving to shippers. They also stressed the need of a small-boat harbor. A representative of the Green Bay & Western Railroad sponsored an alternate site, shown on plate 1, near the Winona Bridge and railroad company bridge, about three-fourths of a mile below the site favored by the city. He stated that the bridge company possessed a tract of land suitable for development into a river terminal, which tract possessed the advantage of being served by four of the five railroads entering Winona, while the city site is served by but one, and that if the city site were developed the other four might be subjected to excessive switching charges. Other parties considered that a terminal at the lower site would be objectionable because it would present difficulties to the maneuvering of tows and would be too distant from the business section for ready use by local firms. All parties who voiced opinions at the hearing favored the development of a barge terminal, the only question raised being in regard to the site. City authorities stated that the city council had agreed to expend from $35,000 to $40,000 to develop the city property into a terminal by the construction of a sea wall, railroad connections, etc.

20. *Survey.*—A special survey of the water front, including soundings and probings in the river, was made as a part of this review and the data obtained have been used as a basis for the estimates of the costs of those phases of a project which might be undertaken by the United States. Essential features of the areas under consideration are shown on plate 1 of this report.

21. *Plan of improvement.*—The plan of improvement proposed herein is essentially that suggested by the city of Winona except that the small-boat harbor would not be recessed as deeply into the bank and the breakwater would not be as long as the city proposes. Reference is made to the location and site maps (pl. 1). The proposed project would consist of dredging along the right bank of the river between Carimona and Chatfield Streets to provide a minimum depth of 9 feet below normal pool level (elevation 645.5 mean sea level) between the right shore and the main river channel, the dredging of the river front between Carimona and Hamilton Streets to provide a minimum depth of 5 feet below normal pool in the area proposed for a small-boat harbor and the construction of a rock-fill breakwater

along and off the end of the point at the upper end of the small-boat-harbor site to provide protection to the small-boat harbor. The dredged material would be placed on the right bank in the area to be used for a freight terminal. No material would be placed on the water front of the small-boat harbor as it is considered desirable to leave the natural shore for beaching. The dredging and the construction of the breakwater would be done by the United States with the cooperation of the city of Winona in furnishing free of cost to the United States all disposal areas and rights-of-way. In addition, the city has agreed to do the following items of work which constitute a necessary part of the project:

(*a*) Freight terminal: Construct a vertical concrete bulkhead or timber-trestle wharf to facilitate the unloading or loading of barges, provide an access road, railroad spur, and suitable dolphins, and rip-rap the river face of the fill.

(*b*) Small-boat harbor: Provide the necessary floating booms and wharves and facilities for dispensing potable water, gasoline, and oil to patrons of the harbor.

22. *Cost.*—The estimated costs to the United States of the improvement proposed above are as follows:

Freight terminal:	
Excavation:	
Sand and silt, 45,000 cubic yards, at 25 cents per yard	$11,250
Loose rock, 3,000 cubic yards, at 75 cents per yard	2,250
	13,500
Small-boat harbor:	
Excavation—Sand and silt, 6,400 cubic yards, at 25 cents per yard	1,600
Breakwater—Rock fill, 3,000 cubic yards, at 50 cents per yard	1,500
	3,100

The city of Winona has voiced its willingness to expend from $35,000 to $40,000 of city funds for this development in addition to the cost or value of the site which, according to report, is worth approximately $30,000. Although detailed plans and estimates of cost of the work contemplated by the city are not available, the estimates set forth in table 3 are believed to be sufficient to present a fair approximation of the total initial and annual costs for both the freight terminal development and the small-boat harbor covered in the proposed improvement. The items for the small-boat harbor are in addition to the present facilities of the Winona Motorboat Club and those belonging to private parties which would be moved into the harbor.

TABLE 3.—*Detailed cost statement*

FREIGHT TERMINAL

Investment:		
Federal		$13,500
Non-Federal:		
Shore revetment	$10,000	
Timber wharf, pile clusters, etc	15,000	
Railroad spur	7,000	
Access road	7,000	
Land	26,000	
Total non-Federal investment		65,000
Total investment (Federal and non-Federal)		78,500

TABLE 3.—*Detailed cost statement*—Continued

FREIGHT TERMINAL—continued

Annual cost:		
Federal:		
Interest ($13,500 at 3½ percent)	$475	
Amortization (50 years) ($13,500 at 0.76 percent)	105	
Additional maintenance	500	
Total Federal annual cost		$1, 080
Non-Federal:		
Interest ($65,000 at 4½ percent)	$2, 920	
Amortization:		
Shore revetment ($10,000 (50 years) at 0.56 percent)	60	
Timber wharf, etc. ($15,000 (10 years) at 8.14 percent)	1, 220	
Railroad spur ($7,000 (25 years) at 2.24 percent)	160	
Access road ($7,000 (15 years) at 4.81 percent)	340	
Maintenance	2, 000	
Operation	2, 500	
Total non-Federal annual cost		9, 200
Total annual cost (Federal and non-Federal)		10, 280

SMALL-BOAT HARBOR

Investment:		
Federal		3, 100
Non-Federal:		
Marine railway	$500	
Floating piers	800	
Servicing facilities (gasoline, oil, water)	700	
Land	4, 000	
Total non-Federal investment		6, 000
Total investment (Federal and non-Federal)		9, 100
Annual cost:		
Federal:		
Interest ($3,100 at 3½ percent)	$110	
Amortization (50 years) ($3,100 at 0.76 percent)	25	
Additional maintenance	100	
Total Federal annual cost		235
Non-Federal:		
Interest ($6,000 at 4½ percent)	$270	
Amortization:		
Marine railway ($500 (25 years) at 2.24 percent)	10	
Floating piers ($800 (10 years) at 8.14 percent)	65	
Servicing facilities ($700 (10 years) at 8.14 percent)	60	
Maintenance	100	
Total non-Federal annual cost		505
Total annual cost (Federal and non-Federal)		740

DISCUSSION

23. *Freight terminal.*—Winona has a substantial manufacturing and wholesale business and a thriving hinterland comprising a large portion of southern Minnesota and, in a restricted sense, the west central part of Wisconsin. These areas are tributary to Winona through the existence of two railroads, the Chicago & North Western and the Chicago Great Western, which have Winona as the eastern terminus of their branch lines, and a third, the Green Bay & Western, which

has its western terminus at Winona. Consequently, Winona is the logical transshipment point for those commodities originating from, or destined for, points served by these railroads and the Mississippi and its connecting waterways downstream from Winona. Lack of suitable terminal facilities prevents the economic handling of commodities and an interchange of freight between barge and rail. Thus the area is effectively handicapped from sharing the advantages of water-borne transportation. The interest shown by the business concerns of Winona and the officials of two of the railroads referred to above indicates ample cooperation toward making the terminal development a success.

24. All estimates of prospective tonnage are subject to wide variation and, while the estimates contained in table 2 may be attained, certain of them may be too large; consequently, for a conservative basis for justification of the proposed harbor a number of items might be deleted from the list or the tonnage greatly reduced. Due to the existing facilities available for moving eastern coal via the Great Lakes, it is possible none of this would move by river. On the other hand, it appears certain that coal from southern Illinois would be transported by barge and a movement of 35,000 tons might be expected with the improved facilities, this amount being in addition to the requirements of the local utility company which has its own unloading equipment. The 35,000 tons would include 6,400 tons of coal which are now being moved by barge into Winona by a local retail coal company and on which an additional saving of approximately 20 cents per ton, due to improved facilities, is possible. On the remaining 28,600 tons a saving of 50 cents per ton is believed possible as the difference in quoted all-rail rates and estimated barge rates show a saving of approximately 60 to 70 cents per ton. Replies to inquiries addressed to various paper and pulp mills in the Wisconsin River Valley indicate that a large amount of coal is consumed by them and that it now moves via the Great Lakes at quite reasonable rates. Therefore, the heavy tonnage of coal mentioned by an official of the Chicago & North Western Railway at the public hearing, which apparently was based on this consumption, appears uncertain at this time. Should rate structures change and permit such heavy tonnage to move via river, it is believed that other terminal facilities, in addition to those contemplated in the proposed improvement, would have to be provided. Replies to other inquiries relative to sulfur consumption by the paper and pulp mills reveal that approximately 24,000 tons of this commodity are consumed in an area which might be served by Winona. The annual consumption of each of the several companies reporting is only about 4,000 tons, and it is possible that they would not find it economical to provide storage space if supplied in large lots. This might necessitate the provision of storage space at the terminal and the establishment of a warehouse concern to supply the sulfur as needed. Assuming that a part of the 10,000 tons considered likely to move by water would require storage, the saving of about $1.45 per ton in freight on this commodity has been reduced to $1 per ton to cover such storage. No facilities for handling grain have been contemplated in the proposed development; consequently, this item has not been considered.

25. The tonnage and savings set forth in table 2, in addition to the items of coal, sulfur, and grain which have been dealt with above,

total 13,440 tons and $27,204, respectively. The saving on this same tonnage is based on the difference between all-rail or existing combination barge-rail rates via Dubuque or other existing barge terminals and the barge or combination rail-barge rates via the Winona terminal, obtained from other sources, total $21,558. Assuming that a tonnage of approximately one-half is more reasonable for these other items, and that the saving per ton based on rates obtained from the other sources is correct, a saving of $10,000 on these items might be a reasonably conservative figure. These reductions result in an estimated annual probable water-borne commerce of about 52,000 tons, on which a total saving of about $35,000 might reasonably be expected. Table 2 allows substantial handling costs, whereas, the barge rates, obtained from other sources, which differ considerably in a number of cases from the rates reported in table 2, include the handling costs from barge to rail or stock pile at the terminal. A study of possible reduction in transportation costs by the use of river terminals already developed reveals that there are established combination barge-and-rail rates on 9 of the 28 commodities listed in table 2, but that practically none of these move via other barge terminals due to the low differentials. Also, it is understood that the establishment of combination rates for the other commodities is practically an impossibility.

26. The estimated saving of $35,000 is over three times the annual cost of the development as set forth in table 3. The detailed cost statement does not include any item for handling equipment but, as the barge rates cover the extra handling involved, it is assumed that the cost of this equipment would be taken care of. Furthermore, the cost of all the land obtained by the city for this development has been set up in the cost structure of the terminal, whereas a goodly portion of it could be used for other purposes without detriment to the terminal.

27. It is believed that the site proposed by the city is much better for a municipal terminal than that proposed by the representative of the Green Bay & Western Railroad as it is located much closer to the business section of the city, it is off the main sailing course of the river where there will be no interference to through traffic, and it has sufficient width for factory sites in addition to the terminal. The site proposed by the railroad company would be ideal for large volume bulk transshipment and it is believed that, if the heavy tonnage contemplated by its proponent should develop, the construction of another terminal at that site might be justified. In view of the definite stand taken by the city of Winona that no city funds would be available for any site other than that proposed by it and the fact that, following the hearing, the Chicago & North Western Railway assured the city that reasonable switching charges from the proposed city site would be made available to the other railroads, further consideration was not given to the site proposed by the railroad company official. No other site along the city water front with sufficient frontage and depth for a terminal site and within a reasonable distance of the business district is available.

28. *Small-boat harbor.*—The existing water front along the Mississippi River at Winona is devoid of any sheltered harbor for the use of small boats and, with the increase in interest in recreational boating on the river from improved water levels and boating equipment, there is an urgent need for a harbor for local and transient small

boats at that point. Winona is located approximately 28 miles above La Crosse, Wis., and approximately 34 miles below Wabasha, Minn., where very meager facilities are now available for service to small-boat operators. The Winona Motorboat Club maintains a number of boathouses and some floating booms at or near the foot of Kansas Street but, as the area is adjacent to the navigation channel and is unprotected from ice and waves, it is not a satisfactory site. From information submitted at the public hearing (exhibit E, minutes of public hearing),[1] considerable damage, mainly from ice action, has been incurred over a period of years. The report shows that, in 1918, 24 boathouses and the booms of the club were damaged, 4 houses being damaged beyond repair; that, in 1920, 5 houses and 2 boats were damaged beyond repair, with a loss of $2,850 to their owners; and that, in 1933, 15 houses and 1 boat were damaged, 5 houses and 1 boat being completely wrecked, with a loss to the owners of the items destroyed of $1,325, no estimate of the cost of repairing those not completely damaged having been submitted. The boathouses referred to are frame structures 10 by 25 feet, more or less, in plan supported on steel drums or other devices for floating them, and cost from $200 to $300 or more to build. Estimating the loss for 1918 as $600, and omitting the damages to houses or boats which were not destroyed, the average annual loss since 1918 from ice action is about $220. The danger from ice floes would be overcome in the proposed harbor by riprapping the point at the head thereof and the construction of a rock-fill breakwater out and downstream from this point. The breakwater would be built with a top width of 5 feet, side slopes of 1 to 1, and a top elevation of 655 mean sea level, which has been exceeded by the level of the river only four times since 1880.

29. The proposed small-boat-harbor site, while not ideal due to lack of room for ready future expansion and its proximity to the proposed barge terminal, is reasonably distant from the through channel, is well located with respect to the business section which is important to transients, particularly, and the site can be developed at low cost. The space planned for the harbor is sufficient for present needs, and if additional space is needed later an area immediately upstream therefrom could be developed for this purpose. There are reported to be at the present time, in and near Winona, approximately 640 small boats. It is apparent that this includes a great many small skiffs and rowboats which would not use a harbor but would be beached near the owners' homes or other points of ready access. Practically no launches or larger recreational craft now headquarter at Winona but it is anticipated that if a sheltered harbor with the necessary servicing facilities, stalls, public landing, etc., is provided, a number of local people will obtain better boats and the number of transients who stop at Winona will materially increase. It is believed that the savings from ice damage and the benefits to local and transient recreational boatmen are considerably in excess of the estimated $740 annual cost of this phase of the project. The city of Winona has stated that it will provide the necessary items of local cooperation for the proposed small-boat harbor and there is every reason to believe that it will do so.

[1] Not printed.

30. *Conclusions.*—It is concluded:

(*a*) That the development of a municipal barge terminal at Winona, Minn., is warranted by the prospective savings in transportation costs to the city and adjacent trade territory.

(*b*) That participation by the United States in the dredging necessary for such a development is justified.

(*c*) That there is need for the development of a suitable protected harbor for small boats at Winona.

(*d*) That participation by the United States in the development of a small-boat harbor is justified, to the extent of dredging and constructing a breakwater, provided the city furnish satisfactory assurances that it will provide the necessary items of local cooperation.

31. *Recommendations.*—The district engineer recommends that the United States dredge an area along the right bank of the Mississippi River between Hamilton and Chatfield Streets in Winona to provide access to the proposed municipal barge terminal and a basin for a small-boat harbor and construct a breakwater at an early date, at estimated Federal costs of $16,600 for construction and $600 for additional annual maintenance, subject to the following conditions:

(*a*) That the rights-of-way and suitable disposal areas for new work and subsequent maintenance shall be furnished at no cost to the United States.

(*b*) That the city of Winona shall revet the river face of the terminal property and furnish assurances satisfactory to the Secretary of War that it will construct adequate terminal facilities open to the public on equal terms.

(*c*) That the city of Winona shall furnish satisfactory assurances that it will provide the necessary floating booms and wharves and servicing facilities open to the public on equal terms.

J. W. MORELAND,
Captain, Corps of Engineers,
District Engineer.

[First endorsement]

OFFICE, DIVISION ENGINEER,
UPPER MISSISSIPPI VALLEY DIVISION,
St. Louis, Mo., July 19, 1940.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

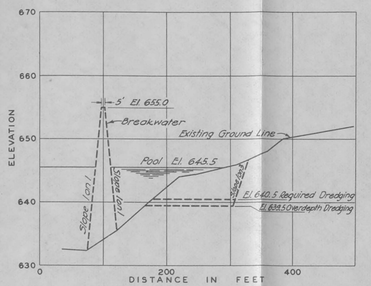
This office concurs in the conclusions and recommendations of the district engineer.

MALCOLM ELLIOTT,
Colonel, Corps of Engineers,
Division Engineer.

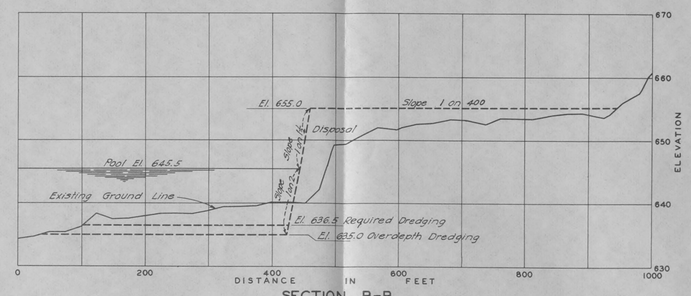
O

WAR DEPARTMENT

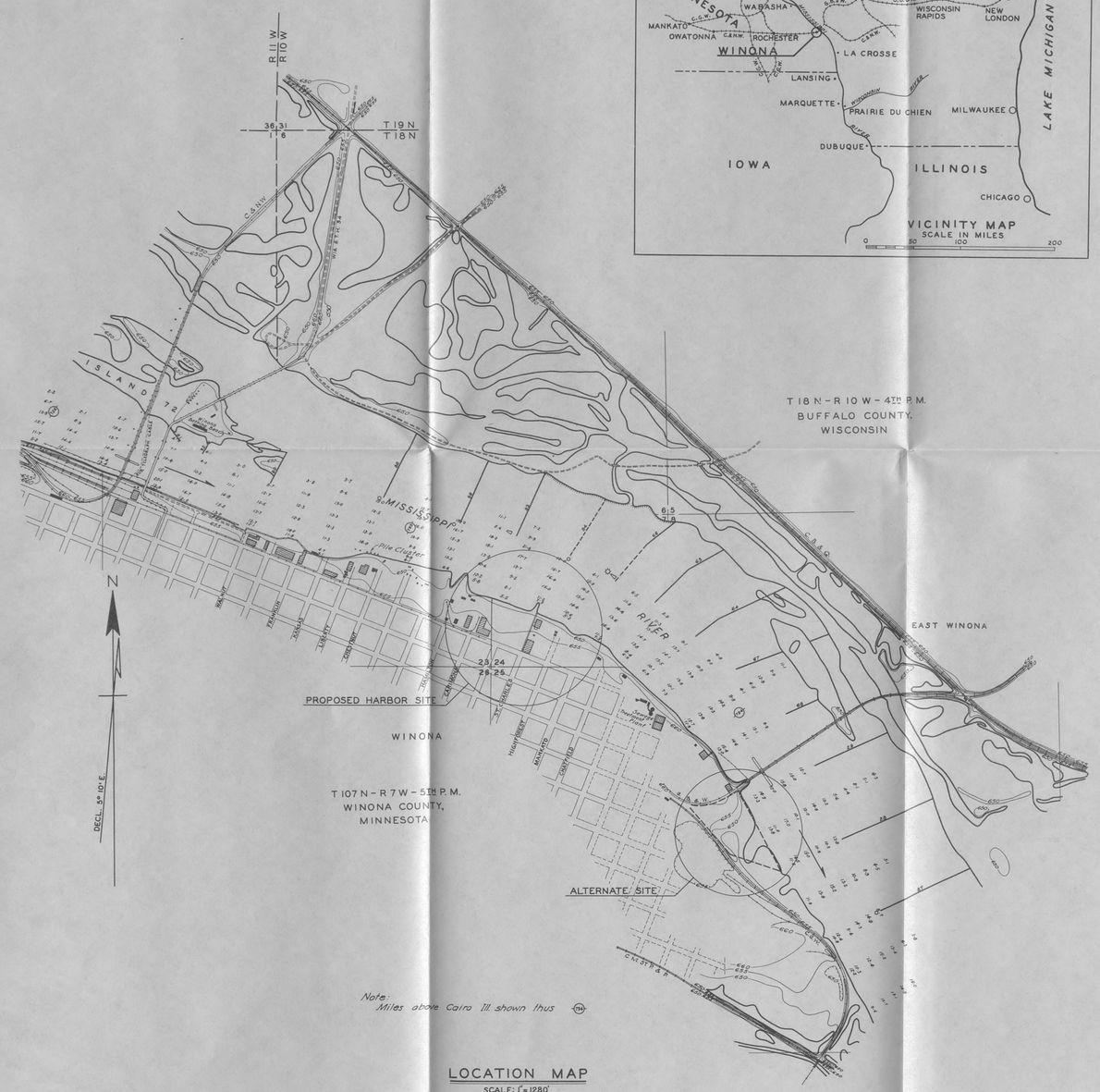
CORPS OF ENGINEERS, U.S. ARMY



SECTION A-A

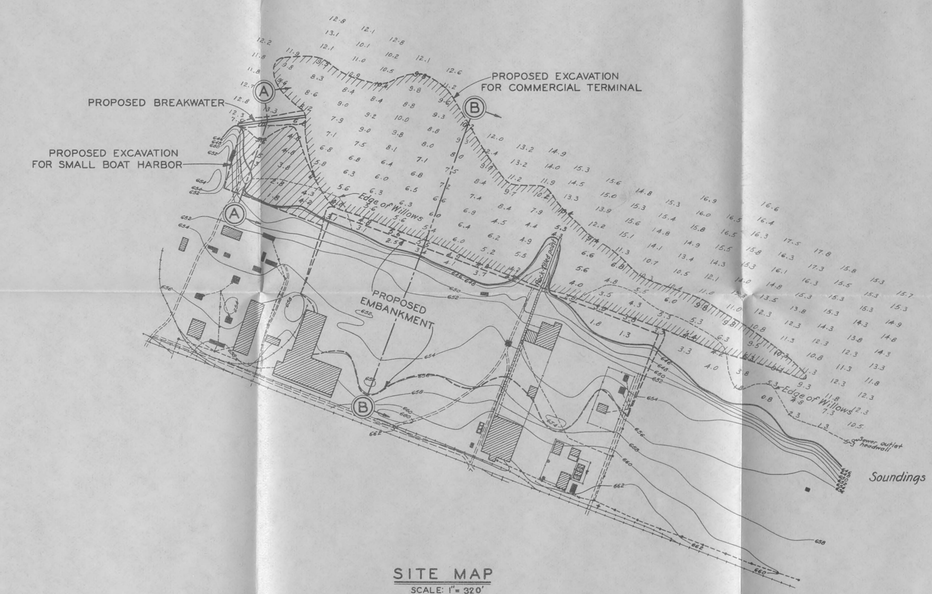


SECTION B-B



Note:
Miles above Cairo Ill. shown thus (m)

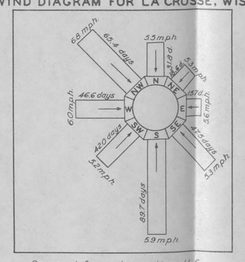
LOCATION MAP
SCALE: 1"=1280'



Soundings referred to flat pool El. 645.5

SITE MAP
SCALE: 1"=320'

WIND DIAGRAM FOR LA CROSSE, WIS.



Prepared from observations U.S. Weather Bureau at La Crosse, Wis.

The length and breadth of the rectangles are proportional, respectively, to the duration of the wind from the given direction and to its average velocity.

BY	DATE	CHARACTER
		REVISIONS

TRANSMITTED WITH REPORT DATED: APRIL 29, 1940

UPPER MISSISSIPPI RIVER

PROPOSED HARBOR

WINONA, MINN.

SCALE: AS SHOWN

U.S. ENGINEER OFFICE ST. PAUL MINN. APRIL 1940

SUBMITTED: _____ SENIOR ENGINEER

RECOMMENDED: _____ PRINCIPAL ENGINEER

DRAWN BY:

TRACED BY: G.E.W.

CHECKED BY:

FILE NO. 118-132

APPROVED: _____ CAPT. CORPS OF ENGINEERS

PLATE NO. 1

HOUSE DOC. NO. 263, 77TH CONG., 1ST SESSION

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